

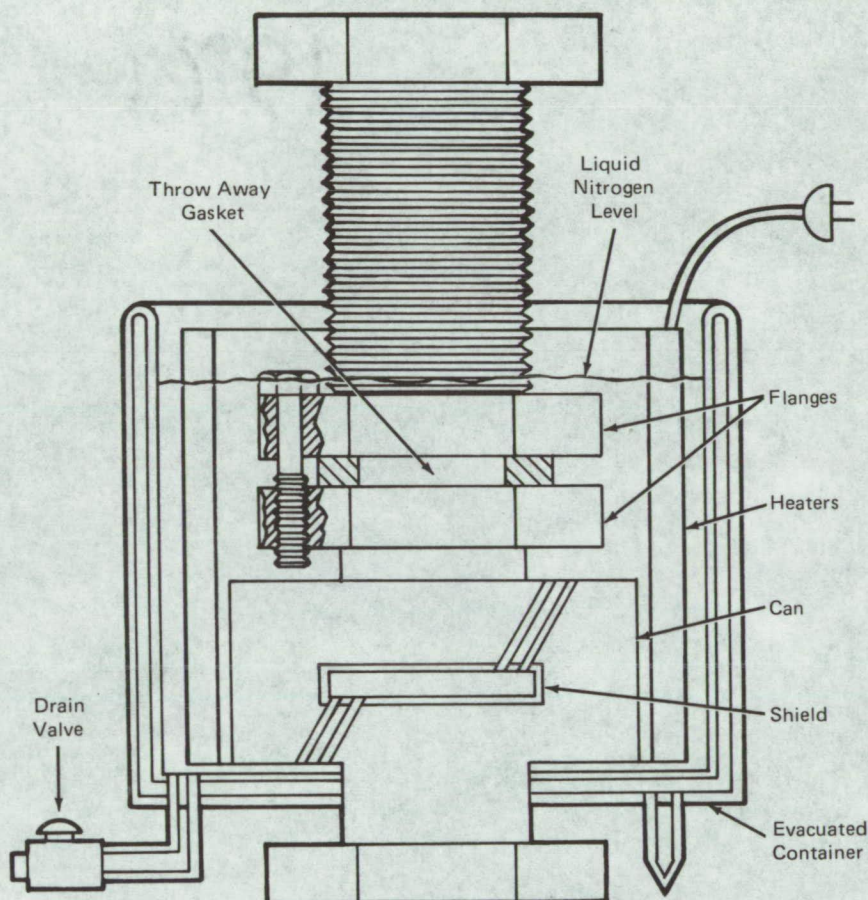
NASA TECH BRIEF

Goddard Space Flight Center



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Preventing Oil Migration in Vacuum Systems



The problem:

Presently in vacuum systems, there are no known means to completely eliminate oil migration from the mechanical pump to other areas of the system.

The solution:

A method has been developed which uses a disposable metal gasket that is removed when the system is deactivated. This forms a gap that prevents oil migration.

How it's done:

When the trap is maintained at liquid nitrogen temperature, oil will not migrate across material components. When the system is not in use, the metal gasket is removed to prevent oil migration.

Under the method illustrated in the diagram, liquid nitrogen is removed through the drain valve when the system is not in use. The heater is employed to warm the trap, and then the throwaway gasket is taken out.

(continued overleaf)

(The time required for oil to migrate across this warmed assembly, before removing the gasket, is on the order of two hours.) Without this gasket, oil cannot migrate across the air space between the two flanges. When the system is to be used again, a new gasket is inserted. The liquid nitrogen is then brought up to the indicated level, maintaining the can, shield gasket, and flanges at the appropriate temperature. Bakeout of the trap is accomplished when the trap is open to air.

Note:

No additional documentation is available. However, specific questions may be directed to:

Technology Utilization Officer
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Patent status:

No patent action is contemplated by NASA.

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